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Forest Insect Field Station,
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INFORMATION ON THE MOUNTAIN PINE BEETLE IN IDAHO AND MONTANA

The mountain pine beetle (Dendroctonus monticolae Hopk.) attacks and kills healthy mature western white pine, western yellow pine, lodgepole pine and sugar pine. The adult insects, which are stout, black, cylindrical bark beetles about one-fifth of an inch in length, bore through the outer bark and construct long, perpendicular egg galleries directly between the living bark and the wood. Along these galleries, which may be from 14 to 30 inches in length, eggs are laid which soon hatch into small grubs or larvae. These white legless larvae excavate short mines at right angles to the egg galleries, also directly between the bark and wood. These larval mines terminate in cells in which the mature larvae transform to pupae and then to the new adults.

The combined result of a large number of egg galleries and larval mines is the girdling of the tree, which causes its death. In order to kill a tree a large number of beetles must attack it to overcome its resistance. This attack usually occurs throughout the merchantable length of the tree.

When the transformation from the larva to the new adult is complete the insect emerges by boring a hole through the outer bark. A week or 10 days, or even more, may elapse between the time the new adults are formed and emergence. By boring away the bark between the pupal cells several beetles may use the same emergence hole or even take advantage of cracks or other openings in the bark. The principal emergence of these beetles in Idaho and Montana occurs during the latter part of July and the early part of August. The new adults may fly several miles before attacking new trees, though this attack usually occurs within a few days after emergence. Throughout Idaho and Montana there is usually but one generation of these insects each year. During long seasons, however, especially in white pine and yellow pine, there is often a partial second generation.

Insect-attacked trees can be located by the fading foliage, by the boring dust at the base of the tree, or by the pitch exudations (pitch tubes) at the mouth of the entrance tunnels. With infested yellow pine and white pine there is a slight fading of the foliage in the fall following the attack, but with lodgepole pine there is no discoloration until the following June. The discoloration of the foliage varies in different locations so that it is always necessary to examine the trees in order

to determine the presence of the broods causing the foliage discoloration. For definitely locating the infested trees during control projects it has been found necessary to examine every tree.

It must be remembered that it is impossible to save a tree after it has once been successfully attacked. The insect broods within the tree can be destroyed, however, and the subsequent attack of other trees prevented. Though nature aids materially in the prevention and reduction of epidemics by providing natural enemies of these destructive insects, under certain conditions a normal infestation can increase to a severe epidemic in a very few years. As the development of the insect takes place directly between the bark and wood it is only necessary to remove the bark while the broods are in the larval or pupal stage in order to destroy them by exposure. When feasible it has been found to be more economical to burn or scorch the infested logs than to peel the bark from the trunk. In southern Oregon it has been found that with an air temperature of 80° to 90° F. the broods on the top side of the log will be killed in a very few hours if the trees are felled and the trunk exposed to the sun. In using this method it will be necessary to turn the log once, and perhaps twice, in order to kill the insects on the other side.

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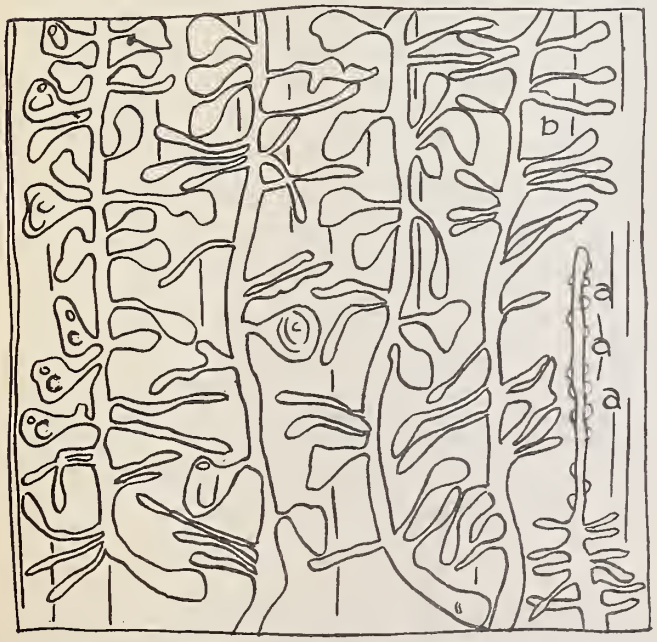
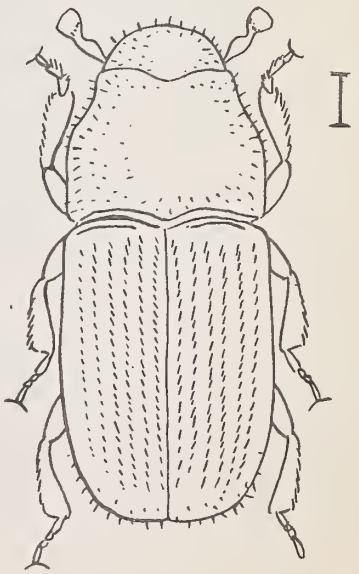


The mountain pine beetle: a, eggs; b, larval mines; c, pupal cells. (Reduced)



Adult mountain pine beetle. (Greatly enlarged)